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### Teaching for student self-regulated learning

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# Chapter 1

**Introduction**

## General introduction

This research was prompted by my fascination with what current secondary school teachers do during classroom lessons to facilitate and stimulate student learning. I started my own career as a teacher about 20 years ago, and I was led to believe that I was responsible for ‘teaching’ my students my subject(s). I did so by telling them as much as possible during my lessons. It was what I had seen my teachers doing during my own time at school and what my colleagues were also doing. As a new teacher I barely thought about what role I played in my students’ learning. I was more concerned about the grades they gained, this being the ‘proof’ of my hard work and success as a teacher.

In the following ten years as a teacher in secondary vocational education, I was introduced through seminars to theoretical concepts such as ‘independent working’, ‘independent learning’ and ‘self-regulated learning’. In these seminars I was told (!) about these concepts and was given an assignment to work out how I could implement them in my classroom. One thing at least was clear: I had to talk less during classroom lessons in order to allow my students to work more independently. In practice it meant that I was busy creating study guides outside the lessons so that the students could work independently during part of the lesson. In this way, I directed my students (in silence!) to work on their assignments.

As a result of my experiences and as a new teacher educator, I became very interested in how current teachers in secondary education manage to implement new educational developments in their classrooms. How do teachers organize student self-regulated learning in practice? (I never felt that I myself succeeded in doing this properly). Are there differences between teachers in the way they organize or support students in self-regulated learning? Out of curiosity and in an attempt to find an answer to these questions, my dissertation was born. My primary aim was to gain an understanding of teacher activities in secondary education, particularly in relation to achieving self-regulated learning during the time students spend in the classroom.

My personal interest in the current role of teachers in student self-regulated learning was also influenced by public attention to students’ ability to regulate their learning. Student self-regulated learning has become increasingly important within education. This is reflected in a shift from curricula focused on student learning outcomes towards greater attention to learning processes and students’ ability to execute these processes (Kostons, Donker, & Opdenakker, 2014). As a determining factor in the quality of education

(Ministerie van OCW, 2013), the teacher might have an important role in the development of student self-regulated learning. Educational research programmes oriented towards teacher professionalization also refer to the teacher's role in the learning and development of students (NRO-call 2013–2020).

Public attention to student self-regulated learning, combined with my personal interest in the teacher's role in this, guide the general aim of the present dissertation: gaining an understanding of secondary teacher regulating activities related to student self-regulated learning within classroom practice. In the remainder of this chapter, I will first describe the concept of self-regulated learning, addressing a definition of the concept, as well as its relevance. I will then elaborate on the role of the teacher, specifically focusing on teacher regulating activities related to student self-regulated learning. This will be followed by a discussion of the relationship between teacher regulating activities and student learning outcomes, including consideration of possible influencing factors. I will also look at different ways in which teacher regulating activities related to student self-regulated learning can be measured. Finally, the remaining chapters of this dissertation are briefly introduced.

### ***Student self-regulated learning***

In current secondary education in the Netherlands and elsewhere, the development of student self-regulated learning skills is considered a major factor in developing life-long learning skills (Zimmerman, 2008), and these are also important during a student's school career. Students who can regulate and adjust their learning behaviour learn more efficiently (Cazan, 2013) and achieve better academic results (Järvelä, Järvenoja, & Malmberg, 2012; Zimmerman, 2008). Self-regulated learning is therefore perceived as a key to successful learning in school and beyond (Pintrich, 2002; Winne, 1995; Zimmerman, 2002).

Research on the development of self-regulating skills has a long history: Dewey, as early as 1910, wrote about 'learning to think' (De Jong, 1992). In response to research on memory strategies, Salatas and Flavell coined the term 'metamemory' in 1971 (Salatas & Flavell, 1976), which Flavell further elaborated as 'metacognition'. According to Flavell, metacognition 'refers, among other things, to the active monitoring and consequent regulation and orchestration of these processes in relation to the cognitive objects or data on which they bear, usually in the service of some concrete goal' (Flavell, 1976, p. 232). Brown and others further elaborated the definition of self-regulated learning in subsequent years (De Jong, 1992).

More recently, self-regulated learning is interpreted as a process in which students actively and constructively monitor and control their motivation, cognition and behaviour (Aldridge, Fraser, Bell, & Dorman, 2012; Järvelä et al., 2012). Self-regulated learners take control of their own learning process by, for example, setting proximal, attainable goals, being learning-oriented, understanding that different learning tasks require different strategies, and making effective use of the most appropriate learning strategies (Zimmerman, 2002). Self-regulating learners can adapt their learning strategies to the immediate requirements of each particular learning situation (De Jong, Kollöffel, Van der Meijden, Kleine Staarman, & Janssen, 2005). Knowledge, skills and attitudes can be transferred from one learning context to another and from learning situations in which this information has been acquired to a leisure or work context (Boekaerts, 1999; Van Grinsven & Tillema, 2006).

Although research has shown that self-regulation develops from early childhood to adolescence, training and intervention studies have supported the argument that self-regulation can be successfully taught to students at all levels (Bidjerano & Dai, 2007). Self-regulation can also be taught successfully in secondary education, in different subject contexts such as text comprehension, problem-solving and applying knowledge (De Jong, 1992). Pintrich (1995) posited that students could learn to self-regulate in academic settings through self-reflection and practice. It is therefore incumbent on teachers to cultivate student self-regulated learning skills (Cazan, 2013).

Teaching students to become more autonomous, strategic and motivated in their learning (Paris & Winograd, 2001) places extremely high demands on the teacher (Nykiel-Herbert, 2004). In addition, secondary education students find themselves in a turbulent period of their lives due to biological, cognitive and social changes, which can have considerable impact on their thinking and behaviour. These student characteristics are often accompanied by a decline in competence and efficacy beliefs (Wigfield, Byrnes, & Eccles, 2006) and a concomitant decline in motivation during this period of schooling (Pintrich, Roeser, & De Groot, 1994).

The support and stimulation of student self-regulated learning places high demands on the teacher and we do not know much about how teachers support and stimulate the development of self-regulated learning skills (Kistner et al., 2010). Therefore, the present dissertation focuses on the teacher's role in student self-regulation, the topic that is explored in the next section.

### ***Teacher activities related to student self-regulated learning***

As part of the school learning environment, teachers can play an important role in stimulating students and developing student self-regulated learning, for example through their teaching activities (Hattie, 2009; Reeve & Halusic, 2009). Teachers have the opportunity to arrange educational environments in which students learn and gain experience with different types of learning skills (Minnaert & Vermunt, 2006; Schunk & Zimmerman, 2007; Zimmerman, 2002). A teaching model that facilitates and enhances self-regulated learning is often referred to as process-oriented teaching (Vermunt, 1994).

Process-oriented teaching is conceived of as teaching in which external control of the learning process by teachers gradually shifts to internal control over the learning process by students. Vermunt (2003) defined an external to internal dimension of self-regulated learning, in which regulation refers to the control of content, the course and outcomes of the learning process. The interplay between teacher regulating activities and student activities is also described by Boekaerts and Simons (1995), who mention three educational regimes in which cognitive, affective and metacognitive functions (Simons, Van der Linden, & Duffy, 2000) are carried out, either by the teacher and/or by the student. The educational regimes differ in the degree of regulation by teacher or student.

*Teacher (or external) regulation* refers to teachers controlling the learning activities by performing these themselves, and in so doing minimizing the need for students to utilize their own thought and learning strategies. As in direct instruction, external regulation is connected with a teacher presence. Instructional activities such as ‘highlighting main points’, ‘presenting and clarifying the subject matter’ and ‘explaining in detail step by step’ belong to teacher-regulated activities.

*Shared regulation:* In a shared-regulation teaching strategy, there is in regulating learning a shared division of tasks between the teacher and the students. The teacher takes on the task of encouraging students to perform learning activities, for example by acting as a role model. Other examples of shared-regulation activities include ‘asking students to summarize’ or ‘encouraging students to evaluate their performance’.

*Internal regulation or process-oriented teaching:* In this educational regime, teachers hand over the responsibility for performing learning functions to the students themselves. Process-oriented teaching facilitates and enhances the students’ ability to employ appropriate thinking strategies in order to construct, change and utilize their knowledge (Lonka & Ahola, 1995; Vermunt & Verloop, 1999; Volet, 1995). Teachers monitor students’ internal regulation and provide feedback and assistance when needed.

Teacher support in the development of students' learning skills requires 'in time' interventions in the students' learning process. Considering the role a teacher can play in the development of students' self-regulation skills, we may ask which teacher regulating activities – related to the above-mentioned distinction in educational regimes – can be found in classroom practice.

Zimmerman (2008) states that self-regulated learners are meta-cognitively, motivationally and behaviourally active participants in their own learning process. In line with this statement and with other studies (Pintrich & De Groot, 1990; Postholm, 2011), metacognition is considered in the present research to be subordinate to and embedded in the concept of self-regulated learning. Metacognition, motivation and behaviour are all seen as components of self-regulated learning.

Students' *metacognitive* awareness is interpreted as the ability to reflect on their own thinking and to use practical problem-solving skills to resolve learning difficulties (Joseph, 2010). Self-regulated learning involves the selective use of specific processes, including metacognitive processes such as goal setting, planning, seeking information and evaluating.

*Motivation* and affect concern all motivational beliefs about oneself related to a task, such as self-efficacy beliefs, interest or affective reactions to oneself and the task (Dignath & Büttner, 2008). Several models stress motivation as an important component in self-regulation processes (e.g., Boekaerts, 1999; Pintrich, 1999).

In Zimmerman's (2008) definition, self-regulated learners are characterized as meta-cognitively, motivationally and *behaviourally* active participants in their own learning process. Research shows that strategy instruction should be context-related and embedded in regular instruction (Postholm, 2011) and that teachers should create learning environments in which various learning activities and strategies can be executed. Behaviour in this context refers to teachers regulating students' learning activities.

For teachers facilitating students' opportunities to learn about and gain experiences with learning skills, there are different modes of regulating the self-regulated learning components. In a meta-analysis of reading interventions within the field of learning disabilities, components of direct instruction together with strategic instruction proved to be the most effective in optimizing learning processes and learning outcomes (Swanson, 1999).

*Direct instruction* refers to teachers explicitly instructing students on the components of self-regulated learning. It is like 'teaching' students the self-regulated learning components, with a prominent leadership role for the teacher and with students following the teacher's instructions. In addition to direct instruction, we distinguish reasoned

instruction and questioning, which can both be interpreted as derived from Swanson's strategic instruction.

*Reasoned instruction* refers to teachers instructing students to execute learning activities, complemented by information about the relevance of the learning activity and the situation in which that activity is useful. Students who believe that the learning task is interesting and important will engage in more metacognitive activity, more cognitive strategy use and more effective effort management (Pintrich & De Groot, 1990).

The final instructional mode distinguished in our study is *questioning*. Teachers' questioning helps students to participate actively in their own learning process. Questioning enables teachers to engage, stimulate and extend students' thinking. It also allows teachers to learn the students' perspective, which is a condition for providing guidance that students experience as supporting competence (Vansteenkiste et al., 2012).

Not much is known about exactly how teachers support and stimulate the development of student self-regulating skills (Jossberger, Brand-Gruwel, Boshuizen, & Van de Wiel, 2010) within their classroom practice. Gaining insight into the way in which teachers stimulate and facilitate student self-regulated learning might be useful, helping both student teachers and incumbent teachers. Therefore also from a scholarly point of view the general aim of this dissertation, gaining insight into secondary education teacher regulating activities related to student self-regulated learning, is of importance. Before addressing the way in which teacher regulating activities were measured, the relationship between teacher regulating activities and student learning outcomes is briefly discussed.

### ***Teacher regulating activities and student learning outcomes***

The teacher is widely recognized as an important determinant of the learning environment in the classroom. Research on teacher effectiveness and classroom environment has shown the importance of teachers and their teaching to student engagement and student academic outcomes (Appleton, Christenson, & Furlong, 2008; Hamre & Pianta, 2005; Opdenakker & Minnaert, 2011). Teacher behaviours that have been found to relate to student outcomes include feedback, classroom management and organization, and communication of teacher expectations (Den Brok, Brekelmans, & Wubbels, 2004; Opdenakker & Minnaert, 2011; Pianta & Hamre, 2009).

To our knowledge, however, teacher regulating activities and the relationship to student learning outcomes have received little attention to date. This relationship is



therefore also investigated within the present dissertation, which seeks to gain an understanding of teacher regulating activities related to self-regulated learning. To gauge as accurately as possible the influence of teacher regulating activities, the variables of student liking of the teacher, teacher gender, teacher age and years of teaching experience are taken into account.

### ***Measuring teacher regulating activities in the classroom context***

The present study involved a mixed-method approach. Inventory data on large-scale student perceptions was combined with observational data to gain an understanding of teacher regulating activities related to student self-regulated learning. Observations were used to validate the inventory data, as well as to investigate teacher regulating activities in greater depth.

In order to gain a reliable insight into teacher practice, it is important to use reliable and valid measurement instruments and, prior to that, to consider whether to use teacher perceptions, observational data or student perceptions to study teacher practice. Although teacher perceptions might be useful when investigating teacher intentions or teachers' own learning activities, there is evidence that teachers' self-reports about their behaviours are partly shaped by their ideal and are therefore not necessarily actual representations of their classroom practices (Wubbels, Brekelmans, & Hooymayers, 1992). Therefore, in this dissertation teacher perception data were not gathered.

Observations provide a detailed description of what teachers do, but it is a time-consuming and intensive way of gathering data, as is the analysis of that data. Observation studies therefore tend to rely on a small sample of schools and teachers, as well as a small number of lessons per teacher.

Student perceptions are rather useful when carrying out large-scale studies of teacher practices; it is relatively easy to obtain student perceptions and it is a cheap and practical way to gather information (Den Brok et al., 2004). Furthermore, student perceptions combine many different individual perceptions and are often based on a large number of lessons and several situations and contexts, which helps to build up a highly differentiated picture of teacher practices.

Another important reason for using student perceptions of the learning environment is that they constitute a mental representation of learning activities and affect conscious and unconscious choices in the classroom (Boekaerts & Cascallar, 2006). Student perceptions mediate the influence of the learning environment on student outcomes (Den Brok et

al., 2004); the way in which students perceive, interpret and process information in the instructional situation, including teacher practices, is an important determinant of what they learn (Shuell, 1993).

## **Aims and overview of the dissertation**

Besides my personal fascination and the societal relevance of this work, the theoretical background as described in the previous sections indicate the academic relevance of the present dissertation. Research on self-regulated learning, as well as on teaching activities related to student self-regulated learning, has produced several theoretical models. Not much is known, however, about exactly how teachers support and stimulate the development of student self-regulated learning skills within classroom practice.

This dissertation presents six studies conducted in secondary education. Five studies aimed at gaining an understanding of teacher regulating activities within classroom lessons. One study investigated the relationship between teacher regulating activities and student perceived learning outcomes.

The aim of *Chapter 2* is to investigate whether teacher regulating activities can be measured in a reliable and valid way by means of a student perceptions inventory, the Pedagogical Practices Inventory (PPI). Before developing the PPI, we analysed some existing student perception questionnaires that also assessed aspects of teacher practices such as instructional behaviour or monitoring. However, these questionnaires do not specifically measure teacher regulating activities aimed at student self-regulated learning in secondary education. Hence the development of the Pedagogical Practices Inventory.

Chapter 2 describes two studies. A large-scale inventory study examined aspects of reliability and validity by computing the internal consistency of the subscales and the correlations between the subscales. In the second study, a combination of observational data and inventory data was used to validate the PPI further, by investigating the relationship between student perceptions and observations of a group of teachers, selected from the dataset of the first study.

Theorizing about the teacher's role in the learning process raises the question of the extent to which the modes of regulation (Boekaerts & Simons, 1995), related to a gradual transition to student self-regulation, can be observed in classroom practice. The focus in *Chapter 3* is on whether teachers differ in their pedagogical practices in terms of the mode of regulating student learning activities.

Two studies were conducted: the first included student perceptions data, gathered using the PPI, to determine teachers' pedagogical practices relating to regulation. For this study, the student perceptions inventory dataset from the inventory study described in Chapter 2 was supplemented by an inventory dataset from a new cohort. In the second study, observation measures were used to examine whether differences amongst the teachers, based on student perceptions, were also detected by observers who watched videotaped lessons given by the teachers.

*Chapter 4* presents a study in which an observation scheme was used to gain a more in-depth insight into the teacher regulating activities of a selected group of teachers. An observation scheme combines the self-regulated learning components perspective and the instructional perspective. It permits an analysis of teacher regulating activities related to self-regulated learning within naturalistic classroom settings.

*Chapter 5* looks at the relationship between teacher regulating activities intended to regulate student learning and student outcomes, a topic that to our knowledge has received little attention to date. Student perceptions inventory data is used, both to shed light on teacher practice and to gauge student learning outcomes. The data for this study have been collected from the same sample as described in Chapters 2 and 3. Because of their possible influence on the relationship between teacher regulating activities and student learning outcomes, we take into account students' liking of the teacher and the teacher's age, experience and gender.

Finally, *Chapter 6* first provides a summary of the main findings of the dissertation. The chapter further discusses the theoretical and practical implications of these findings. It then outlines directions for further research and ends with a general conclusion.

*A note to the reader:*

*The chapters in this dissertation are written in such a way that they can be read independently. Consequently, some degree of overlap in the introductory sections of the chapters is inevitable. It should also be noted that, regardless of their publication status, the chapters have been written in collaboration with my supervisors. I therefore mainly use the pronoun 'we' rather than 'I' in the relevant chapters.*

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